STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF WATER RESOURCES
20653 DUPONT BLVD
UNIT 5
GEORGETOWN, DE 19947

April 20, 2014

Brian Carbaugh
WESS Associates
1132 S. Little Creek Road
Dover, DE 19901

RE: Approval of the LE100 Series, Pre-Engineered Lift Station. (1 hp. sewage pump)

Dear Mr. Carbaugh,

The Division of Water Resources has received and reviewed your request to approve your LE100 Series pre-engineered lift station; to be used in conjunction with Class B designed on-site wastewater treatment and disposal systems in Delaware. We are pleased to inform you that we are able to **approve** the lift station referenced above, provided that they are installed in accordance with the designers proposed components and specific permit conditions.

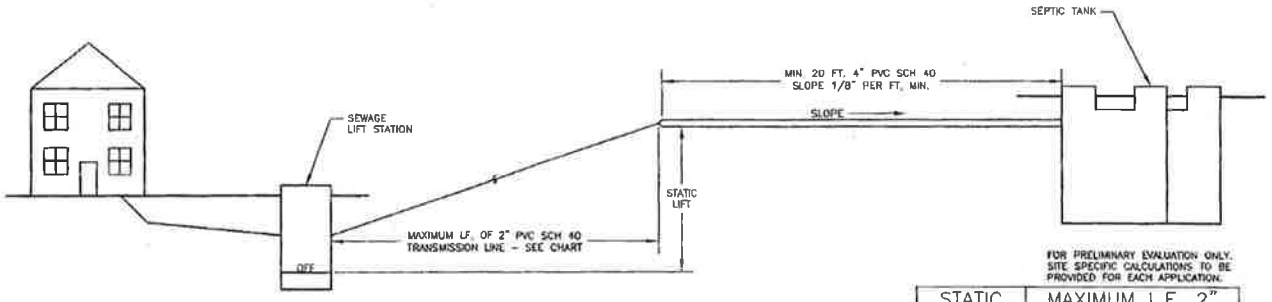
Additionally, specific components (brands, model numbers, etc…) should be listed on permit insert sheet. It also should be noted that this pre-engineered lift station is designed to be used in a 26" x 26" (internal dimensions) concrete tank produced by Tower's Concrete. As a condition of this approval, no substitution of components is allowed without written approval from the design engineer and pre-approval from the Department.

If you have any other questions please contact me at 856-4561.

Sincerely,

James Cassidy
Program Manager I
Ground Water Discharges Section

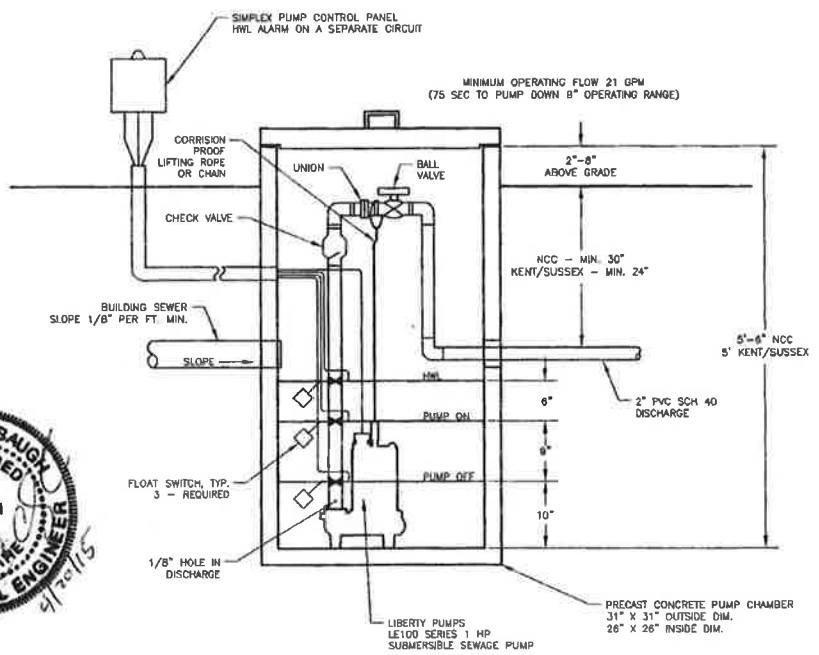
Cc: file

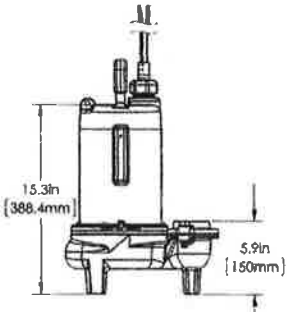


FOR PRELIMINARY EVALUATION ONLY. SITE SPECIFIC CALCULATIONS TO BE PROVIDED FOR EACH APPLICATION.

STATIC LIFT	MAXIMUM L.F. 2" TRANSMISSION LINE
5 FT.	1,900 FT.
10 FT.	1,500 FT.
15 FT.	1,200 FT.
20 FT.	900 FT.

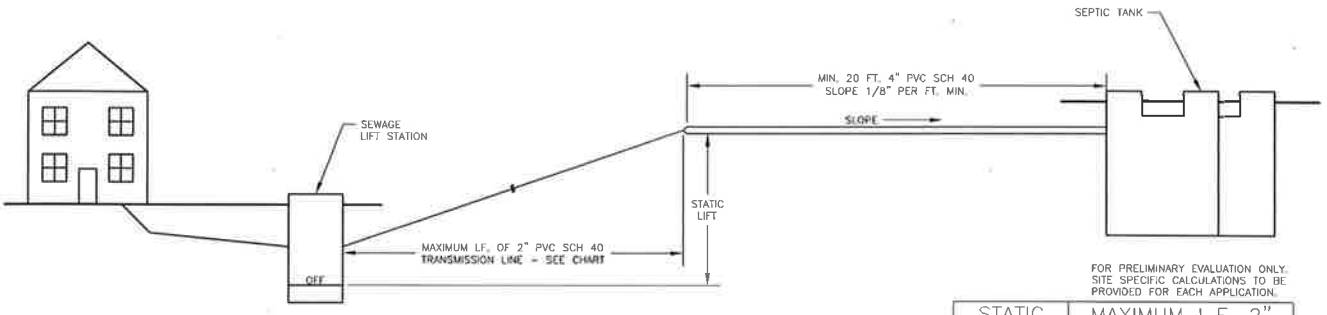
BASED ON 21 GPM FLOW





BRIAN C. CARBAUGH
REGISTERED
No. 7241
DELAWARE
PROFESSIONAL ENGINEER
4/7/15

TYPICAL EFFLUENT AND SEWAGE LIFT STATION DETAILS	
LE100 SERIES - 1 hp - SUBMERSIBLE SEWAGE PUMP	
TOWER'S CONCRETE PRODUCTS, INC. 26425 HOBBS ROAD DENTON, MD 21629 (410) 479-0914	DATE: 4/10/2014 SCALE: N.T.S. SHEET: 1 OF 1



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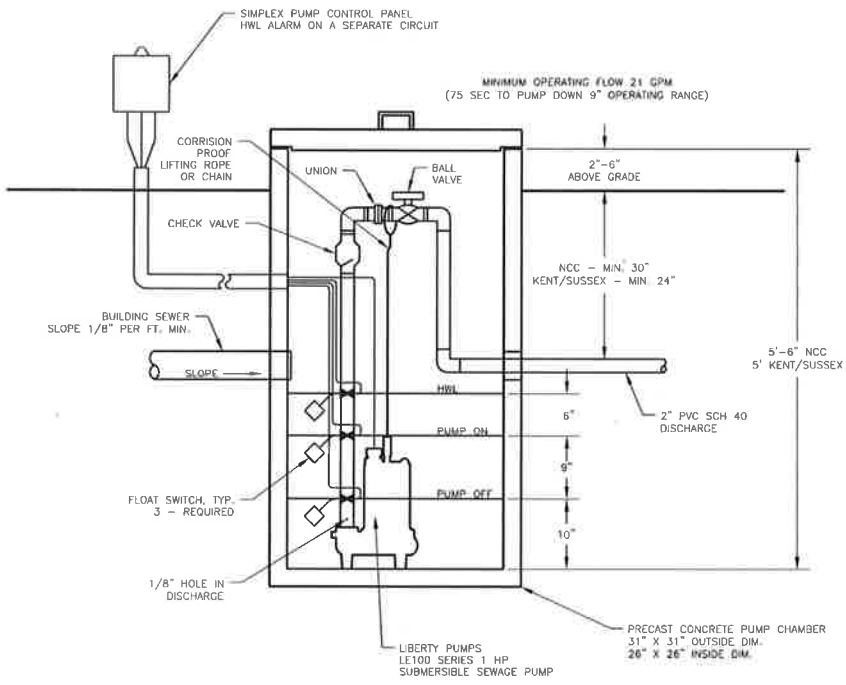
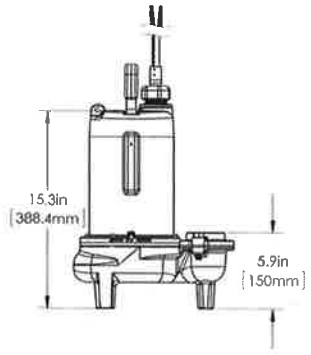




TYPICAL EFFLUENT AND SEWAGE
LIFT STATION DETAILS

LE100 SERIES - 1 hp - SUBMERSIBLE SEWAGE PUMP

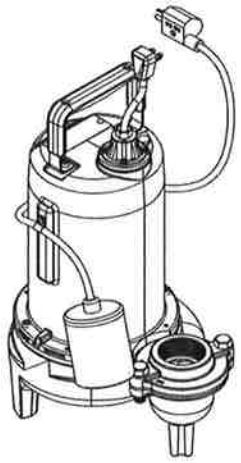
TOWER'S CONCRETE
PRODUCTS, INC.
26425 HOBBS ROAD
DENTON, MD 21629
(410) 479-0914

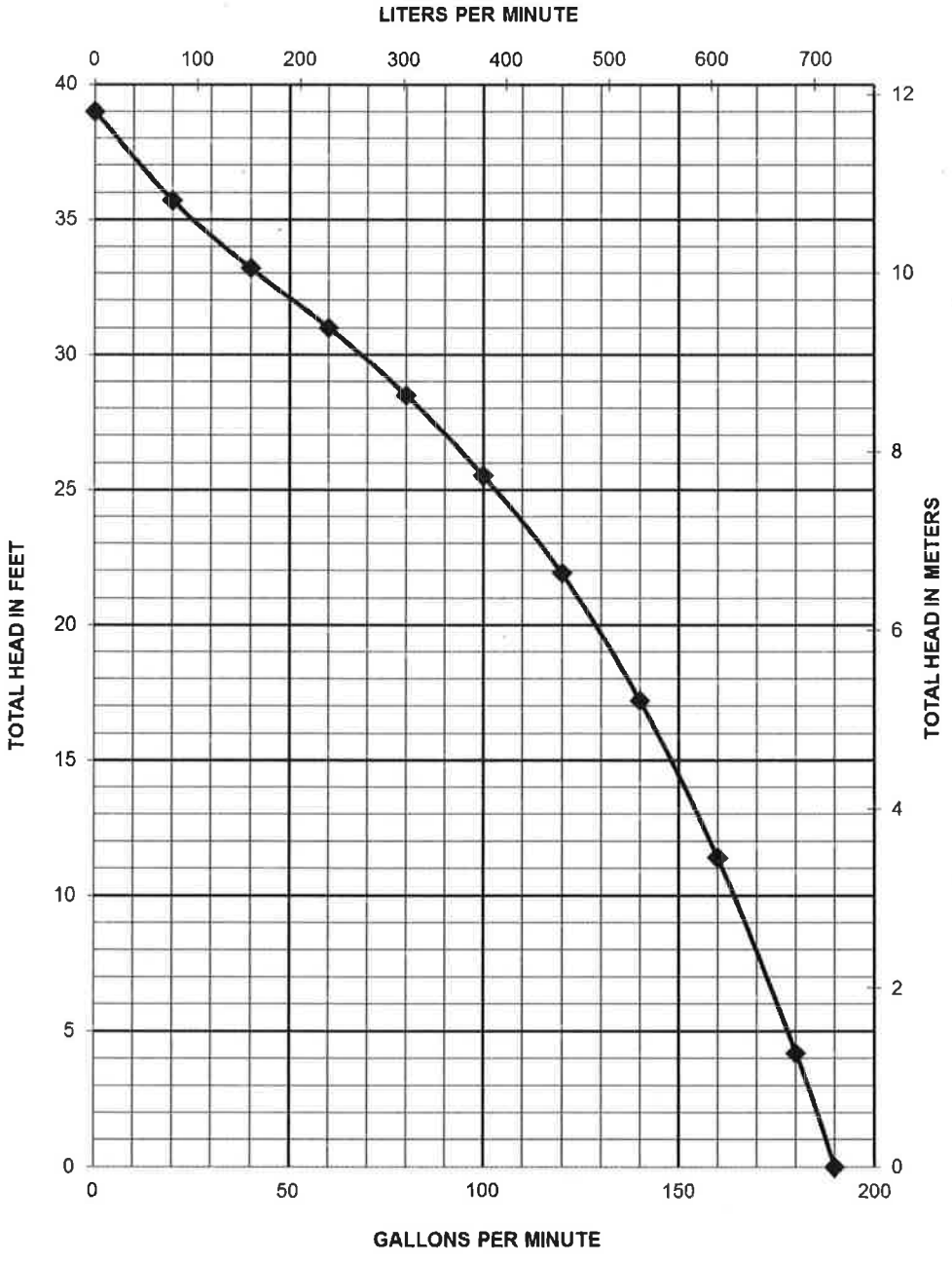
DATE: 4/10/2014
SCALE: N.T.S.
SHEET: 1 OF 1

Liberty Pumps®

Pump Specifications

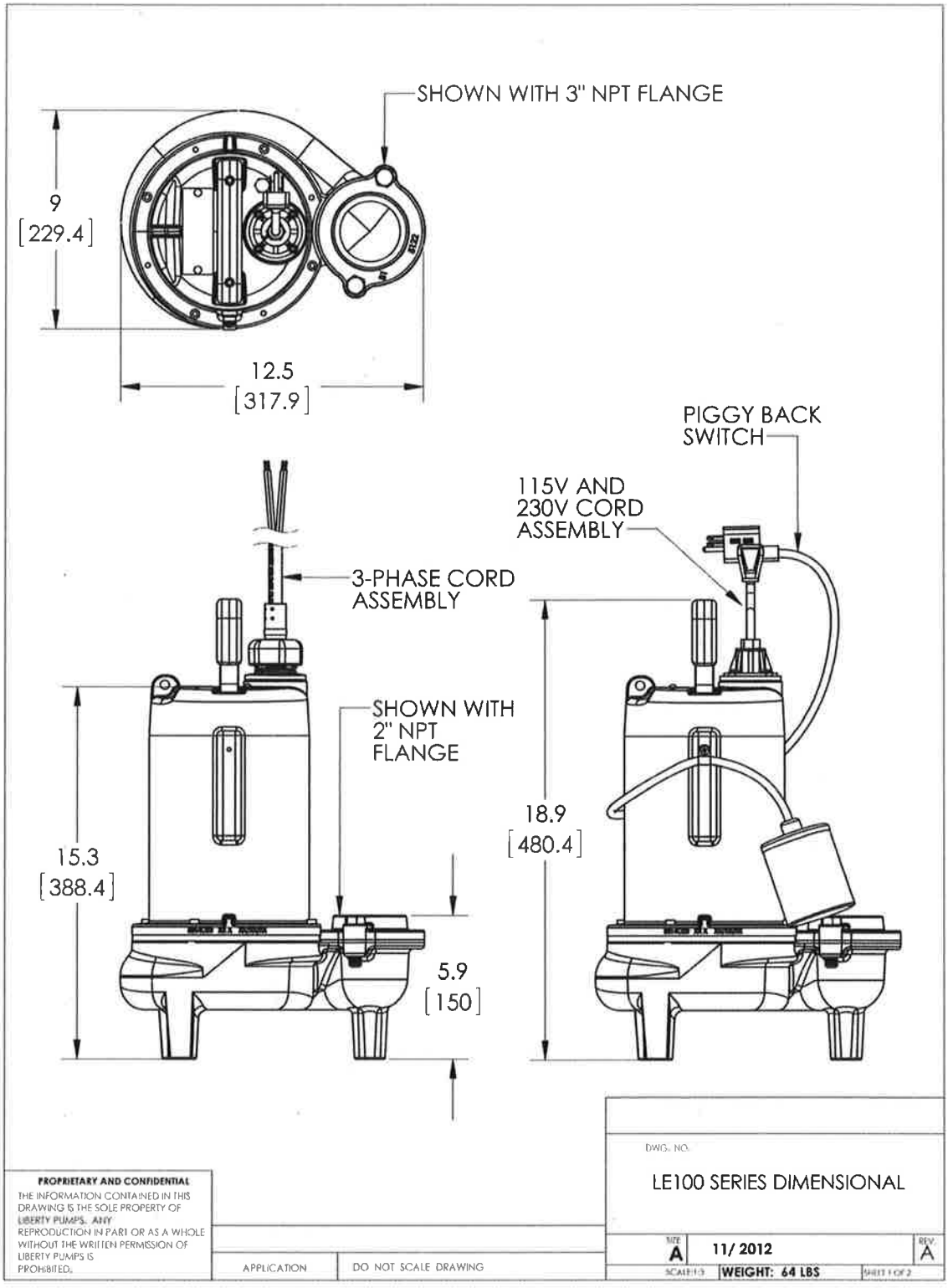
LE100-Series
1HP Submersible Sewage Pump





Liberty Pumps

LE100-Series Dimensional Data



LE100-Series Electrical Data

MODEL	HP	VOLTAGE	PHASE	SF	FULL LOAD AMPS	LOCKED ROTOR AMPS	THERMAL OVERLOAD TEMP	STATOR WINDING CLASS	CORD LENGTH FT	DISCHARGE	AUTOMATIC
LE102A2	1	208-230	1	1.00	8	22.3	105°C 221°F	B	10	2" Flanged	YES
LE102A2-2	1	208-230	1	1.00	8	22.3	105°C 221°F	B	25	2" Flanged	YES
LE102A2-3	1	208-230	1	1.00	8	22.3	105°C 221°F	B	35	2" Flanged	YES
LE102M2	1	208-230	1	1.00	8	22.3	105°C 221°F	B	10	2" Flanged	NO
LE102M2-2	1	208-230	1	1.00	8	22.3	105°C 221°F	B	25	2" Flanged	NO
LE102M2-3	1	208-230	1	1.00	8	22.3	105°C 221°F	B	35	2" Flanged	NO
LE102A3	1	208-230	1	1.00	8	22.3	105°C 221°F	B	10	3" Flanged	YES
LE102A3-2	1	208-230	1	1.00	8	22.3	105°C 221°F	B	25	3" Flanged	YES
LE102A3-3	1	208-230	1	1.00	8	22.3	105°C 221°F	B	35	3" Flanged	YES
LE102M3	1	208-230	1	1.00	8	22.3	105°C 221°F	B	10	3" Flanged	NO
LE102M3-2	1	208-230	1	1.00	8	22.3	105°C 221°F	B	25	3" Flanged	NO
LE102M3-3	1	208-230	1	1.00	8	22.3	105°C 221°F	B	35	3" Flanged	NO
LE103M2-2	1	208-230	3	1.00	5.3	18.3	N/A	B	25	2" Flanged	NO
LE103M2-3	1	208-230	3	1.00	5.3	18.3	N/A	B	35	2" Flanged	NO
LE103M3-2	1	208-230	3	1.00	5.3	18.3	N/A	B	25	3" Flanged	NO
LE103M3-3	1	208-230	3	1.00	5.3	18.3	N/A	B	35	3" Flanged	NO
LE104M2-2	1	440-480	3	1.00	2.5	9.2	N/A	B	25	2" Flanged	NO
LE104M2-3	1	440-480	3	1.00	2.5	9.2	N/A	B	35	2" Flanged	NO
LE104M3-2	1	440-480	3	1.00	2.5	9.2	N/A	B	25	3" Flanged	NO
LE104M3-3	1	440-480	3	1.00	2.5	9.2	N/A	B	35	3" Flanged	NO
LE105M2-2	1	575	3	1.00	1.9	7.1	N/A	B	25	2" Flanged	NO
LE105M2-3	1	575	3	1.00	1.9	7.1	N/A	B	35	2" Flanged	NO
LE105M3-2	1	575	3	1.00	1.9	7.1	N/A	B	25	3" Flanged	NO
LE105M3-3	1	575	3	1.00	1.9	7.1	N/A	B	35	3" Flanged	NO

LE100-Series Technical Data

IMPELLER	2 VANE CLASS 25 CAST IRON
SOLIDS HANDLING SIZE	2"
PAINT	POWDER COAT
MAX LIQUID TEMP	60°C 140°F
MAX STATOR TEMP	130°C 266°F
THERMAL OVERLOAD	105°C 221°F (single-phase only)
POWER CORD TYPE	SJTW (1-PH) or SEOOW (3-PH)
MOTOR HOUSING	CLASS 25 CAST IRON
VOLUTE	CLASS 25 CAST IRON
SHAFT	STAINLESS
HARDWARE	STAINLESS
ORINGS	BUNA N
MECHANICAL SEAL	UNITIZED CERAMIC CARBON
MIN BEARING LIFE	50,000 HRS
WEIGHT	64 LBS

Liberty Pumps

LE100-Series Specifications

1.01 GENERAL:

The contractor shall provide labor, material, equipment, and incidentals required to provide_____(QTY) centrifugal pumps as specified herein. The pump models covered in this specification are Series LE100 single phase or three phase pumps. The pump furnished for this application shall be model _____as manufactured by Liberty pumps.

2.01 OPERATING CONDITIONS:

Each submersible pump shall be rated at 1 hp_____volts _____ phase 60 Hz. 1725 RPM. The unit shall produce_____G.P.M. at _____ feet of total dynamic head.

The submersible pump shall be capable of handling residential sewage with 2" solid handling capability. The submersible pump shall have a shut-off head of 39 feet and a maximum flow of 160 GPM @ 12 feet of total dynamic head.

The pump shall be controlled with:

_____A piggy back style on/off float switch.

_____A NEMA 4X outdoor simplex control panel with three float switches and a high water alarm.
_____A NEMA 1 indoor simplex control panel with three float switches and a high water alarm.

_____A NEMA 4X outdoor duplex control panel with three float switches and a high water alarm.
_____A NEMA 1 indoor duplex control panel with three float switches and a high water alarm.
_____A NEMA 4X outdoor duplex control panel with four float switches and a high water alarm.
_____A NEMA 1 indoor duplex control panel with four float switches and a high water alarm.

3.01 CONSTRUCTION:

Each centrifugal sewage pump shall be equal to the ^{C} ^{US} certified Series LE100 SERIES pumps as manufactured by Liberty Pumps, Bergen NY. The castings shall be constructed of class 25 cast iron. The motor housing shall be oil filled to dissipate heat. Air filled motors shall not be considered equal since they do not properly dissipate heat from the motor. All mating parts shall be machined and sealed with a Buna-N o-ring. All fasteners exposed to the liquid shall be stainless steel. The motor shall be protected on the top side with sealed cord entry plate with molded pins to conduct electricity eliminating the ability of water to enter internally through the cord. The motor shall be protected on the lower side with a unitized ceramic/carbon seal with stainless steel housings and spring. The upper and lower bearing shall be capable of handling all radial and thrust loads. The pump shall be furnished with stainless steel handle.

4.01 ELECTRICAL POWER CORD

The submersible pump shall be supplied with 10,25 or 35 feet of multiconductor power cord. It shall be cord type SJTW (1-PH) or SEOOW (3-PH), capable of continued exposure to the pumped liquid. The power cord shall be sized for the rated full load amps of the pump in accordance with the National Electric Code. The power cable shall not enter the motor housing directly but will conduct electricity to the motor by means of a water tight compression fitting cord plate assembly, with molded pins to conduct electricity. This will eliminate the ability of water to enter internally through the cord, by means of a damaged or wicking cord.

5.01 MOTORS

Single phase motors shall be oil filled, permanent split capacitor, class B insulated NEMA B design, rated for continuous duty. Three phase motors shall be oil filled, class B insulated NEMA B design, rated for continuous duty. At maximum load the winding temperature shall not exceed 130 degrees C unsubmerged. Since air filled motors are not capable of dissipating heat they shall not be considered equal. Single phase pump motors shall have an integral thermal overload switch in the windings for protecting the motor. Three phase motors shall be used with an appropriate controller with integral overload protection. The capacitor circuit shall be mounted internally in the pump on single phase units.

6.01 BEARINGS AND SHAFT

Upper and lower ball bearings shall be required. The bearings shall be a single ball / race type bearing. Both bearings shall be permanently lubricated by the oil, which fills the motor housing. The motor shaft shall be made of 300 or 400 series stainless steel and have a minimum diameter of .625".

7.01 SEALS

The pump shall have a unitized carbon / ceramic seal with stainless steel housings and spring equal to Crane Type 6A. The motor plate / housing interface shall be sealed with a Buna-N o-ring.

8.01 IMPELLER

The impeller shall be a class 25 iron, with pump out vanes on the back shroud to keep debris away from the seal area. It shall be threaded to the motor shaft.

9.01 CONTROLS

All single phase units can be supplied with CSA and UL approved automatic wide angle tilt float switches. The switches shall be equipped with piggy back style plug that allows the pump to be operated manually without the removal of the pump in the event that a switch becomes inoperable. Manual Pumps are operable by means of a pump control panel.

10.01 PAINT

The exterior of the casting shall be protected with Powder Coat paint.

11.01 SUPPORT

The pump shall have cast iron support legs, enabling it to be a free standing unit. The legs will be high enough to allow 2" solids to enter the volute.

12.01 SERVICEABILTY

Components required for the repair of the pump shall be shipped within a period of 24 hours.

13.01 FACTORY ASSEMBLED TANK SYSTEMS WITH GUIDE RAIL AND QUICK DISCONNECT DISCHARGE

_____Guide factory mounted rail system with pump suspended by means of bolt on quick disconnect which is sealed by means of nitrile grommets or o-rings. The Discharge piping shall be schedule 80 PVC and furnished with check valve and a PVC shut-off ball valve. The Tank shall be wound fiberglass or roto-molded plastic. An inlet hub shall be provided with the fiberglass systems.

_____Stainless steel Guide Rail

_____Zinc plated steel Guide Rail

_____"diameter of basin size

_____"height of basin size

_____"distance from top of tank to discharge pipe outlet

_____Fiberglass cover

_____Structural foam polymer cover

_____Steel cover

_____Simplex System with Outdoor panel and alarm

_____Duplex System with Outdoor panel and alarm

_____Simplex System with Indoor panel and alarm

_____Duplex System with Indoor panel and alarm

_____Separate Outdoor Alarm

_____Remote Outdoor Alarm

_____Separate Indoor Alarm

_____Remote Indoor Alarm

14.01 TESTING

The pump shall have a ground continuity check and the motor chamber shall be Hi-potted to test for electrical integrity, moisture content and insulation defects. The motor and volute housing shall be pressurized, and an air leak decay test is performed to ensure integrity of the motor housing. The pump shall be run, voltage current monitored, and the tester checks for noise or other malfunction.

15.01 QUALITY CONTROL

The pump shall be manufactured in an ISO 9001 certified Facility.

16.01 WARRANTY

Standard limited warranty shall be 3 years.

Liberty Pumps®

SX-Series

Simplex Pump Controls

For reliable control of a single pump in residential or commercial installations. Common applications include sump basins, effluent or sewage pump chambers and lift stations.

Standard Features:

- Across-the-line magnetic contactor
- Test/Auto switch
- Terminal block for easy wiring
- Circuit breaker
- Green pump run indicator light (internal)
- Red alarm indicator light/audible alarm
- Auxilary Contacts
- Alarm silence and test switches
- Tri 120/208/240V. operation on single phase
- Tri 208/240/480V. operation on three phase

Other Available Options:

- Alarm bell
- Redundant off
- Cycle counter
- Dead front
- Main disconnect
- Flasher
- Manual alarm reset
- Power on light
- Lockable latch
- Overload protection
- Alternate beacon color
- High and low level indicators
- Seal fail indicator
- Anti-condensation heater
- Pilot breaker
- Overload reset, thru-door
- Beacon guard
- Thermal cutout
- Elapsed time meter
- Delay timer
- Lightning arrestor
- GFI convenience receptacle
- Start/Run Capacitors

All SX-series panels are shipped complete with floats. Standard cord length is 20 feet.

innovate. evolve.

SX-SERIES SIMPLEX PUMP CONTROLS

MODEL SPECIFICATIONS

MODEL	VOLTS	PHASE	FULL LOAD AMPS (Must match pump)	ENCLOSURE
Single Phase				
SXL21=3	120/208/240	1	0 - 14.9 amps	NEMA 1
SXL24=3	120/208/240	1	0 - 14.9 amps	NEMA 4X
SXH21=3	120/208/240	1	15 - 20 amps	NEMA 1
SXH24=3	120/208/240	1	15 - 20 amps	NEMA 4X
**SXHC24=3	120/208/240	1	15 - 20 amps	NEMA 4X
Three Phase*				
SX34=3-131	208/240/480	3	1.6 - 2.5 amps	NEMA 4X
SX34=3-141	208/240/480	3	2.5 - 4.0 amps	NEMA 4X
SX34=3-171	208/240/480	3	4.0 - 6.3 amps	NEMA 4X
SX34=3-191	208/240/480	3	6 - 10 amps	NEMA 4X
SX34=3-511	208/240/480	3	9.0 - 14 amps	NEMA 4X
SX54=3-121	575	3	1.6 - 2.5 amps	NEMA 4X
SX54=3-151	575	3	2.5 - 4.0 amps	NEMA 4X
SX54=3-161	575	3	4.0 - 6.3 amps	NEMA 4X

** Three phase panels come equipped with thermal overload protection that must be properly sized to the pump's full-load run amps. Multi-tap transformer (208/240/480VAC primary) provides 120V. control voltage. Motor protective switch provides adjustable overload, branch circuit protection and pump disconnect. Please consult factory for proper panel selection.*

*** SXHC24=3 includes start/run capacitors and start relay for use with LSG202M-C and LSGX202M-C models.*

SWITCH SPECIFICATIONS

All standard simplex panels include 3 pilot-duty float switches for Off, On and Alarm. 20' cord standard. Optional lengths available. External weights or pipe clamp mounts required.

CABLE: flexible 18 gauge, 2 conductor

ELECTRICAL: 5 amp, 120/230VAC, 50/60Hz

FLOAT: High impact PVC

140 degrees F. maximum fluid temperature

WEIGHT:

NEMA 1 Panels: 24 lbs. (approx.)

NEMA 4X Panels: 19 lbs. (approx.)

Liberty can customize a panel to your specific pump needs. Please contact us for available options and ordering information. **800-543-2550**

SX-SERIES FEATURES

ENCLOSURE: 8" x 8" x 4"; NEMA 4X – ultraviolet stabilized thermoplastic for outdoor; NEMA 1 – metal for indoor use. Certain options may increase enclosure size. (Three phase panels measure 12" x 10" x 6".)

MAGNETIC MOTOR CONTACTOR: Controls pump by switching hot electrical lines.

HOA SWITCH: Offers manual operation of pump (on circuit board).

GREEN PUMP RUN INDICATOR: on circuit board.

FLOAT SWITCH TERMINAL BLOCK: on circuit board.

CONTROL AND ALARM FUSES: on circuit board.

CONTROL AND ALARM POWER INDICATORS: on circuit board.

CIRCUIT BREAKER: Single phase panels include 20 amp breaker to provide pump disconnect and branch circuit protection. Three Phase breakers sized to application and provide additional overload protection for the pump.

PUMP INPUT POWER AND PUMP CONNECTION TERMINAL BLOCK

GROUND LUG

AUXILIARY CONTACTS

ALARM PACKAGE: NEMA 4X = red beacon and horn (83 to 85 db), exterior test/normal/silence switch. NEMA 1 = door mounted red indicator and buzzer mounted internally (83 to 85 db), exterior test/normal/silence switch.

c UL us LISTED Dual safety certification for the United States and Canada.

Specifications subject to change without notice.

Liberty Pumps • 7000 Apple Tree Avenue • Bergen, New York 14416 • Phone 800-543-2550 Fax (585) 494-1839
www.libertypumps.com

Single Phase Simplex
SXL21=3, SXL24=3, SXH21=3, and SXH24=3

Manufactured by SJE-Rhombus®

Installation Instructions and Operation/Troubleshooting Manual

Liberty Pumps®

7000 Apple Tree Avenue
Bergen, New York 14416
Phone: 1-800-543-2550
Email: liberty@libertypumps.com
www.libertypumps.com

This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state and local electrical codes.

All conduit running from the sump or tank to the control panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. **NEMA 1 enclosures are for indoor use only,** primarily to provide a degree of protection against contact with enclosed equipment. Cable connectors are not required to be liquid-tight in NEMA 1 enclosures. **Do not use NEMA 1 enclosures if subjected to rain, splashing water or hose-directed water. NEMA 4X enclosures are for indoor or outdoor use,** primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water and hose-directed water. **Cable connectors must be liquid-tight in NEMA 4X enclosures.**

⚠WARNING	ELECTRICAL SHOCK HAZARD	⚠WARNING	EXPLOSION OR FIRE HAZARD
	Disconnect power before installing or servicing this product. A qualified service person must install and service this product according to applicable electrical and plumbing codes.		Do not use this product with flamable liquids Do not install in hazardous locations as defined by National Electrical Code, ANSI/NFPA 70.

Failure to follow these precautions could result in serious injury or death. Replace product immediately if switch cable becomes damaged or severed. Keep these instructions with warranty after installation. This product must be installed in accordance with National Electric Code, ANSI/NFPA 70 so as to prevent moisture from entering or accumulating within boxes, conduit bodies, fittings, float housing, or cable.

Warranty void if panel is modified.

Call factory with servicing questions:

1-800-543-2550

7203000B

Installation Instructions

Installation of Floats

A standard single phase simplex panel is designed to operate with three floats. These floats operate pump stop, pump start, and high level alarm functions.

Note: Options ordered may affect the number of floats and their functions. Please reference the schematic provided with the control panel for proper installation.

CAUTION: If control switch cables are not wired and mounted in the correct order, the pump system will not function properly.

WARNING: Turn off all power before installing floats in pump chamber. Failure to do so could result in serious or fatal electrical shock.

1. Use float label kit to label floats for specific operation (stop, start, alarm, etc.). See schematic for float options.
2. Determine your normal operating level, as illustrated in **Figure 1**.
3. Place the cord into the clamp as shown in **Figure 2 or 3**.
4. Locate the clamp at the desired position from step 2, and secure the clamp to the discharge pipe as shown in **Figure 2 or 3**.
5. Make sure the movement of floats is not restricted.
6. Wire switch per wiring diagram.
7. Check installation. Allow system to cycle to insure proper operation.

NOTE: Do not install cord under hose clamp. Do not install switch in direct line of incoming liquid.

FIGURE 1: Float Locations

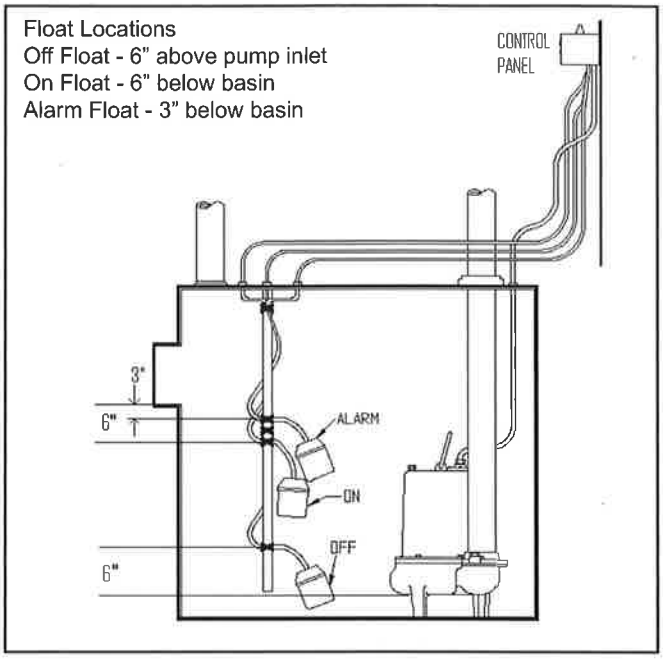
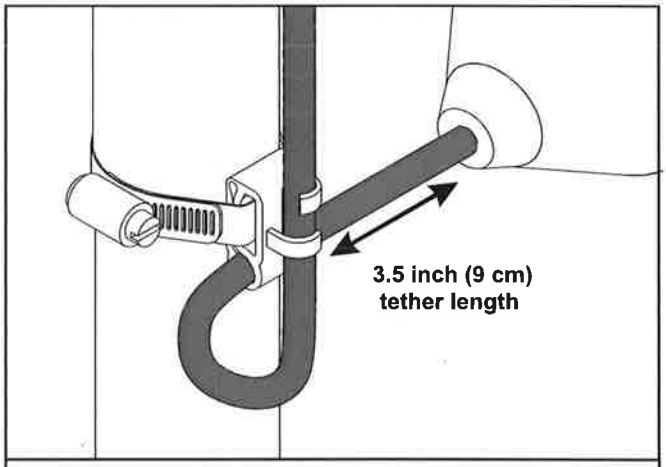
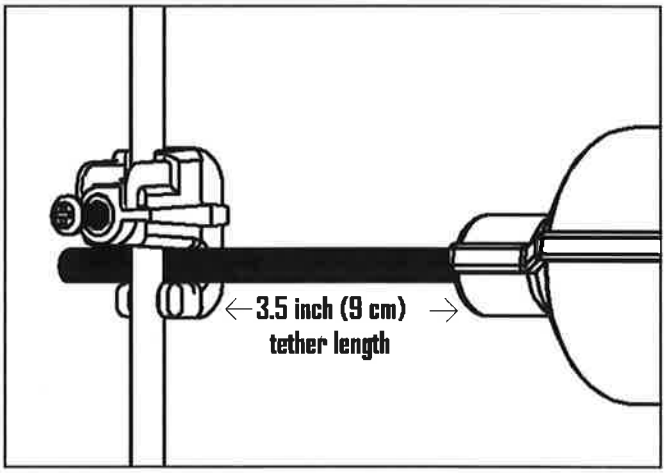


FIGURE 2: Clamp detail, mounting to pipe:



Note: Approximate activation level of 1.5 inches (4 cm) above or below horizontal.

FIGURE 3
Clamp detail, mounting to Liberty Pumps "Quick Tree":



Installation Instructions

Mounting the Control Panel

1. Determine mounting location for panel. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of an SJE-Rhombus® liquid-tight junction box with liquid-tight connectors to make required connections. **You must use conduit sealant to prevent moisture or gases from entering the panel.**

2. Mount control panel (mounting flanges are furnished with control panel).

3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required.

   NOTE: Be sure the proper power supply voltage, and phase are the same as the pump motor being installed. If in doubt, see the pump identification plate for electrical requirements.

4. Drill proper size holes for type of connectors being used.

   NOTE: If using conduit, be sure that it is of adequate size to pull the pump and switch cables through. **You must use conduit sealant to prevent moisture or gases from entering the panel.**

5. Attach cable connectors and/or conduit connectors to control panel.

FOR INSTALLATION WITHOUT A SPLICE, GO TO STEP 11; FOR INSTALLATION REQUIRING A SPLICE, FOLLOW STEPS 6-10.

6. Determine location for mounting junction box according to local code requirements. **Do not** mount the junction box inside the sump or basin.

7. Mount junction box to proper support.

8. Run conduit to junction box. Drill proper size holes for the type of conduit used. Attach liquid-tight connectors to junction box.

9. Identify and label each wire before pulling through conduit into control panel and junction box. Pull pump power cables and control switch cables through connectors into junction box. Make wire splice connections at junction box.

10. Firmly tighten all fittings on junction box. Insure all cable connectors are liquid-tight and sealed.

11. If a junction box is not required, identify and label cables on both float and stripped ends.

12. Connect pump and float wires to proper position on terminals. See schematic inside control panel for terminal layouts.

13. Connect control, alarm and pump power conductors to proper position on terminals. See schematic inside control panel for terminal connections.

    NOTE: It is the recommendation of the factory to use separate pump and control/alarm power sources.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

Operations

Simplex control panels are designed to operate in a three float system as standard. When all floats are in the open or OFF position, the panel is inactive. As the liquid level changes and closes the stop float, the panel remains inactive until the start float also closes. At this point the pump will start, providing the HOA switch is in the AUTOMATIC mode and the power is ON. The pump will remain ON until both the stop and start floats open (return to the OFF position). If the liquid level travels beyond both the stop and start floats and reaches the alarm float, the alarm will be activated. The alarm horn can be silenced by moving the test/normal/silence switch to the silence position.

Alarm System (Horn and Indicator)

When an alarm condition occurs, a red light and horn will be activated. If the test/normal/silence switch is moved to the silence position, the horn will be silenced. When the alarm condition is cleared, the alarm system is reset. The alarm system can be tested by moving the test/normal/silence switch to the test position.

HOA Switch

A hand-off-automatic switch is provided for the pump. In the hand mode, the pump will turn on unless other safety features are employed. In the automatic mode, the pump will turn on from commands by the float switches.

Pump Run Light

The run light will be ON in either the hand or the automatic mode when the pump is called to run.

Circuit Breaker (optional)

The pump circuit has a thermal-magnetic circuit breaker which provides pump disconnect and branch circuit protection.

Dry Auxiliary Contacts (optional)

Normally open - Contacts are open under normal conditions and closed when alarm condition is present.

Normally closed - Contacts are closed under normal conditions and open when alarm condition is present. Both types automatically reset once alarm condition is cleared.

NOTE: Some options ordered may not be included in this manual.

For information regarding the operations of options not listed here or servicing questions, please call a Liberty Pumps customer service technician at

1-800-543-2550

Warranty void if panel is modified.

Troubleshooting

Alarm Horn

Moving the test/normal/silence switch to the test position or activating the alarm float should turn on the alarm horn. If the horn does not sound, replace horn with same type.

Alarm Light

Moving the test/normal/silence switch to the test position or activating the alarm float should turn on the alarm light. If the light does not activate, replace light with same type.

Circuit Breaker (optional)

Check each pole of the circuit breaker for proper resistance reading using the following procedure.

WARNING: Disconnect incoming power to panel.

1. Isolate the circuit breaker by disconnecting either line side or load side wires.

2. Place the ohmmeter leads across the corresponding line and load terminals of each pole.

3. With the ohmmeter on the R X 1 scale and the breaker in the OFF position, the reading should be infinity (very high resistance). With the breaker in the ON position, the reading should be nearly zero ohms (very low resistance). If the readings are not as stated, replace the circuit breaker with one of the same ratings.

   NOTE: Readings may vary slightly depending on the accuracy of the measuring device.

Float Controls

Check the floats during their entire range of operation. Clean, adjust, or replace damaged floats. **Checking the float resistance** - The float resistance can be measured to determine if the float is operating correctly or is defective. Use the following procedure to measure the float resistance.

WARNING: Disconnect incoming power to panel.

1. Isolate the float by disconnecting one or both of the float leads from the float terminals.

2. Place one ohmmeter lead on one of the float wires, and the other ohmmeter lead on the other float wire.

3. Place the ohmmeter dial to read ohms and place on the R X 1 scale. With the float in the "off" position, the scale should read infinity (high resistance). Replace the float if you do not get this reading. With the float in the ON position, the scale should read nearly zero (very low resistance). Replace the float if you do not get this reading.

NOTE: Readings may vary depending on the length of wire and accuracy of the measuring device.

Fuses

Check the continuity of the fuse. With power OFF, pull the fuse out of the fuse block. With the ohmmeter on the R X 1 scale, measure resistance. A reading of infinity indicates a blown fuse and must be replaced. Replace fuse with same type, voltage and amp rating.

Magnetic Contactor Coil

WARNING: Disconnect incoming power to panel.

Check the coil by disconnecting one of the coil leads. Measure the coil resistance by setting the ohmmeter on the R X 1 scale. A defective coil will read zero or infinity, indicating a short or opened coil respectively. Replace defective contactor with same type.

NOTE: Readings may vary depending on the accuracy of the measuring device.

Liberty Pumps Three-Year Limited Warranty

***NOTE:** Liberty Pumps, Inc. assumes no responsibility for damage or injury due to disassembly in the field. Disassembly, other than at Liberty Pumps or its authorized service centers, automatically voids warranty.

Liberty Pumps, Inc. warrants that pumps of its manufacture are free from all factory defects in material and workmanship for a period of 3 years from the date of purchase. The date of purchase shall be determined by a dated sales receipt noting the model and serial number of the pump. The dated sales receipt must accompany the returned pump if the date of return is more than 3 years from the "CODE" (date of manufacture) number noted on the pump nameplate.

The manufacturer's obligation under this Warranty shall be limited to the repair or replacement of any parts found by the manufacturer to be defective, provided the part or assembly is returned freight prepaid to the manufacturer or its authorized service center, and provided that none of the following warranty-voiding characteristics are evident.

The manufacturer shall not be liable under this Warranty if the product has not been properly installed; if it has been disassembled, modified, abused or tampered with; if the electrical cord has been cut, damaged or spliced; if the pump discharge has been reduced in size; if the pump has been used in water temperatures above the advertised rating, or water containing sand, lime, cement, gravel or other abrasives; if the product has been used to pump chemicals or hydrocarbons; if a non-submersible motor has been subjected to excessive moisture; or if the label bearing the serial, model and code number has been removed. Liberty Pumps, Inc. shall not be liable for any loss, damage or expenses resulting from installation or use of its products, or for consequential damages, including costs of removal, reinstallation or transportation.

There is no other express warranty. All implied warranties, including those of merchantability and fitness for a particular purpose, are limited to three years from the date of purchase.

This Warranty contains the exclusive remedy of the purchaser, and, where permitted, liability for consequential or incidental damages under any and all warranties are excluded.

Liberty Pumps®
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Bergen, New York 14416
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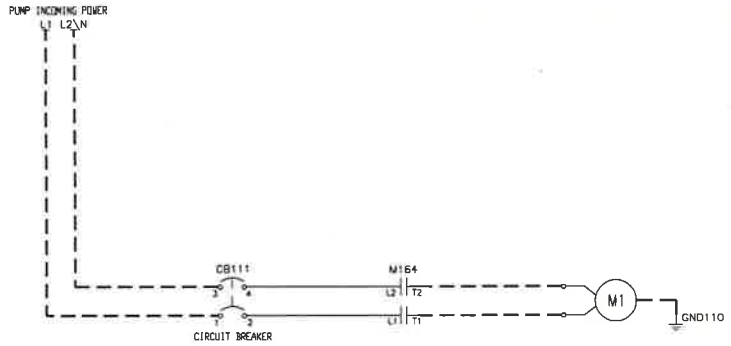
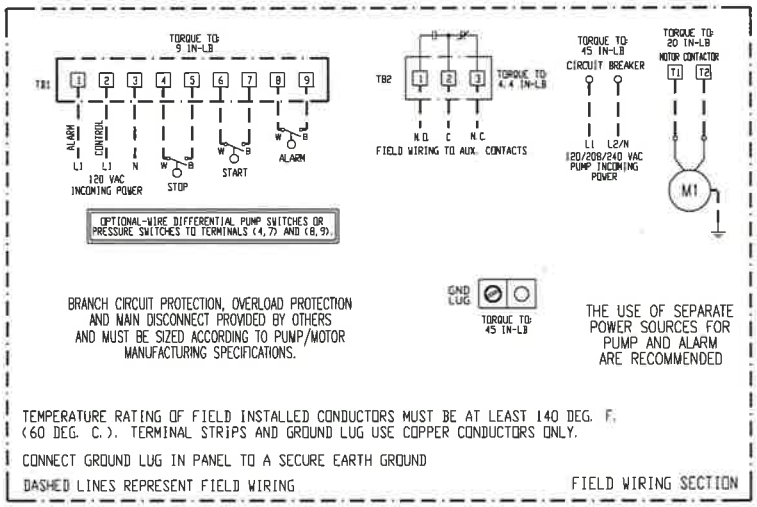
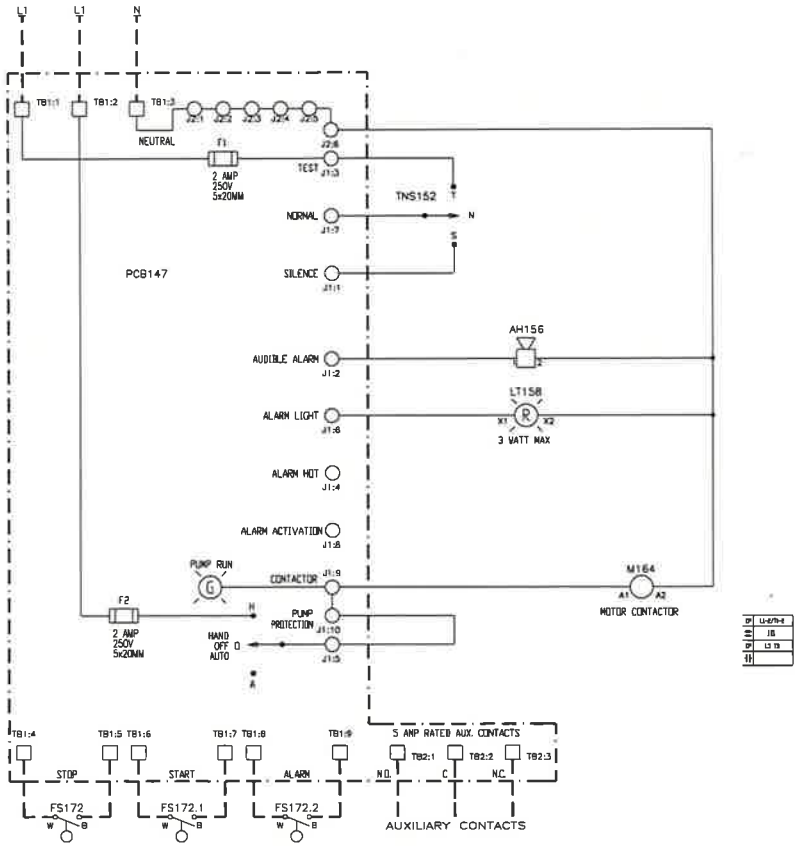
PN1018130E • Rev 06/12







ACTUAL MODEL NUMBER ORDERED

REV.	ECO NO.	DATE	DRAWN	APPD	DESCRIPTION
A	C002949	7/06	GDV		

DRWN BY	DATE	CHKD BY	DATE	APPD BY	DATE
GDV	7/19/06	GDV	7/19/06	RMS	7/19/06

DSN NAME	DSN P/N	PAGE	SCALE	DWG SIZE
N/A	N/A	1 of 1	NONE	D

SJE-Rhombus CONTROLS

PROJECT NO.	QUOTE NO.	REV.
1019326	N/A	A

TITLE: LIT, RH, SCHEM, (SEE ABOVE)

1121*1(A,C)4(H,X)6A*

SJE SIGNALMASTER® Control Switch

Mechanically-activated, narrow-angle float switch designed to activate pump control panels and alarms.

This narrow-angle sensing device is used to accurately monitor liquid levels in:

- potable water
- water
- sewage applications

The SJE SignalMaster® control switch is not sensitive to rotation.

Normally Open Model (high level)
The control switch turns on (closes) when the switch tips slightly **above** horizontal signaling a high level, and turns off (opens) when the switch drops slightly below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the switch tips slightly **below** horizontal signaling a low level, and turns off (opens) when the switch tips slightly above horizontal.

FEATURES

- Passed NSF Standard 61 protocol by an approved Water Quality Association laboratory.
- Mechanically-activated, snap action contacts.
- High impact, corrosion resistant, polypropylene float housing.
- Not sensitive to rotation.
- Control differential of 1.5 inches (4 cm) above or below horizontal.
- Yellow colored cap for easy identification of normally open control switch.
- White colored cap for easy identification of normally closed control switch.
- UL Listed for use in water and sewage.
- CSA Certified.
- Five-year limited warranty.

LR54245 LISTED 83N2

MEMBER

OPTIONS

This switch is available:

- CE certified unit available upon request.
- for normally open (high level) applications or normally closed (low level) applications.
- in standard cable lengths of 10, 15, 20, or 30 feet and 3, 5, 6, or 10 meters (longer lengths available)
- with two mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Externally Weighted: for applications where the switch can be suspended from above.

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL, CSA) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7.0 x 12.3 cm) high impact, corrosion resistant, polypropylene housing for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 PSI (90 kPa)

ELECTRICAL: 5 amp, 125/250 VAC, 50/60 Hz

NOTE: This switch is not recommended for controlling:

- electric loads less than 100 milliamps, 12 VAC
- non-arcing electric loads

SEE BACKSIDE FOR ORDERING INFORMATION.
SEE PRICE BOOK FOR LIST PRICE.

SJE Rhombus®
PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE • 1-218-847-1317
1-218-847-4617 Fax
email: customer.service@sjerhombus.com
www.sjerhombus.com

SJE SIGNALMASTER® Control Switch

Mechanically-activated, narrow-angle float switch designed to activate pump control panels and alarms.

ORDERING INFORMATION

Normally Open		Normally Closed		Shipping Weight
Part #	**Description**	**Part #**	**Description**	
1006042	10SGMPCNO	**1006046**	10SGMPCNC	1.04 lbs.
1006050	10SGMWENO	**1006054**	10SGMWENC	2.73 lbs.
1006043	15SGMPCNO	**1006047**	15SGMPCNC	1.37 lbs.
1006051	15SGMWENO	**1006055**	15SGMWENC	3.05 lbs.
1006044	20SGMPCNO	**1006048**	20SGMPCNC	1.69 lbs.
1006052	20SGMWENO	**1006056**	20SGMWENC	3.30 lbs.
1006045	30SGMPCNO	**1006049**	30SGMPCNC	2.34 lbs.
1006053	30SGMWENO	**1006057**	30SGMWENC	4.03 lbs.

PC = **P**ipe **C**lamp **WE** = **W**eighted **E**xternally **NO** = **N**ormally **O**pen **NC** = **N**ormally **C**losed
NOTE: Descriptions are grouped by cable length measured in feet (10, 15, 20, 30).
SEE PRICE BOOK FOR LIST PRICE.

OPTIONS

MOUNTING CLAMP
is standard - deduct optional

PACKAGING
Bagged - standard.
Boxed - optional
Bulk - optional

ADDITIONAL CABLE
Longer cable lengths available. Please call for details.

UL Listed for Water & Sewage
UL LISTED 83N2 CSA® LR54245

Passed NSF standard 61 protocol by an approved Water Quality Association laboratory.

MEMBER Water Quality ASSOCIATION

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL) SJOW, water-resistant (CPE)

FLOAT: 2.74 inch diameter x 4.83 inch long (7 x 12.3 cm), high impact, corrosion resistant polypropylene for use in sewage and water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

ELECTRICAL: 5 amp, 125/250 VAC, 50/60 Hz

This switch is not recommended for controlling:

- electric loads less than 100 milliamps, 12 VAC
- non-arcing electric loads

OTHER INFORMATION

NORMALLY OPEN (high level) OPERATION
The control switch closes (turns on) when the float tips slightly **above** horizontal signaling a high level, and opens (turns off) when the float drops slightly **below** horizontal in potable water, water or sewage applications.

NORMALLY CLOSED (low level) OPERATION
The control switch closes (turns on) when the float tips slightly **below** horizontal signaling a low level, and opens (turns off) when the float tips slightly **above** horizontal in potable water, water or sewage applications.